

wherein R is a C₁₂-C₂₂ aliphatic hydrocarbon; R' is an independently selectable from hydrogen or C₁ to C₃ alkyl; A is NH or O, and 1 ≤ x+y ≤ 3;

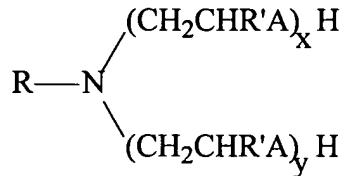
- b) acidifying the invert emulsion drilling fluid until the filtercake solids are reversed from being oil-wet to being water-wet; and
- c) electrically logging said well.

23. (NEW) The method of claim 22 wherein the invert emulsion drilling fluid is acidified by carbon dioxide from the formation.

24. (NEW) The method of claim 22 wherein the invert emulsion drilling fluid is acidified by hydrogen sulfide from the formation.

25. (NEW) A method of gravel packing a downhole area of a subterranean well, said method comprising:

- a) forming a mixture of a gravel packing material and an invert emulsion drilling fluid, wherein said fluid includes: an oleaginous fluid; a non-oleaginous fluid; an amine surfactant having the structure



wherein R is a C₁₂-C₂₂ aliphatic hydrocarbon; R' is an independently selectable from hydrogen or C₁ to C₃ alkyl; A is NH or O, and 1 ≤ x+y ≤ 3;

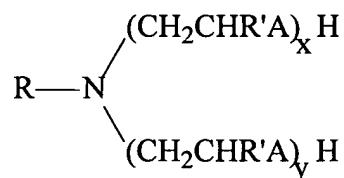
- b) injecting said mixture of gravel packing material and invert emulsion into a subterranean well so as to gravel pack the downhole area ; and
- c) acidifying said fluid so as to change the oil-wet gravel packing materials into water-wet gravel packing materials and;
- d) washing said well with an aqueous based wash solution.

26. (NEW) The method of claim 25 wherein said fluid is acidified by carbon dioxide from the formation.

27. (NEW) The method of claim 25 wherein said fluid is acidified by hydrogen sulfide from the formation.

28. (NEW) A method of fracturing a subterranean formation, the subterranean formation being in fluid communication with the surface via a well, the method comprising:

a) injecting a fracturing fluid into said well, wherein said fracturing fluid includes: an oleaginous fluid; and an amine surfactant having the structure

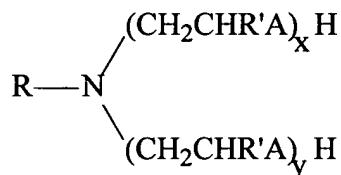


wherein R is a C₁₂-C₂₂ aliphatic hydrocarbon; R' is an independently selectable from hydrogen or C₁ to C₃ alkyl; A is NH or O, and 1 ≤ x+y ≤ 3; and oil-wet proppant material;

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WHAT IS CLAIMED IS:

1. A method of electrically logging a subterranean well, the method comprising:
 - a) drilling the subterranean well with an invert emulsion drilling fluid, wherein said fluid includes: an oleaginous fluid; a non-oleaginous fluid; and an amine surfactant having the structure



wherein R is a C₁₂-C₂₂ aliphatic hydrocarbon; R' is an independently selectable from hydrogen or C₁ to C₃ alkyl; A is NH or O, and 1 ≤ x+y ≤ 3;

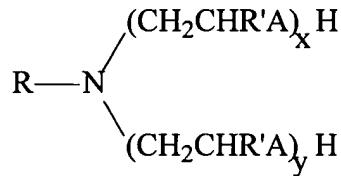
- b) adding acid to the invert emulsion drilling fluid in a sufficient amount to reverse the filtercake solids from being oil-wet to being water-wet; and
 - c) electrically logging said well.
2. The method of claim 1 wherein said oleaginous fluid comprising from 5 to about 100% by volume of the oleaginous fluid of a material selected from a group consisting of esters, ethers, acetals, di-alkylcarbonates, hydrocarbons, and combinations thereof.
3. The method of claim 1 wherein said non-oleaginous liquid is an aqueous liquid.
4. The method of claim 3 wherein said aqueous liquid is selected from the group consisting of sea water, a brine containing organic or inorganic dissolved salts, a liquid containing water-miscible organic compounds, and combinations thereof.

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5. The method of claim 1 wherein said amine surfactant is selected from diethoxylated tallow amine; diethoxylated soya amine; N-aliphatic-1,3-diaminopropane wherein the aliphatic group is a C₁₂ to C₂₂ hydrocarbon; or combinations thereof.

6. A method of gravel packing a downhole area of a subterreanean well, said method comprising:

a) forming a mixture of a gravel packing material and an invert emulsion drilling fluid, wherein said fluid includes: an oleaginous fluid; a non-oleaginous fluid; an amine surfactant having the structure



wherein R is a C₁₂-C₂₂ aliphatic hydrocarbon; R' is an independently selectable from hydrogen or C₁ to C₃ alkyl; A is NH or O, and 1 ≤ x+y ≤ 3;

b) injecting said mixture of gravel packing material and invert emulsion into a subterranean well so as to gravel pack the downhole area ; and
c) adding acid to said fluid so as to change the oil-wet gravel packing materials into water-wet gravel packing materials and;
d) washing said well with an aqueous based wash solution.

7. The method of claim 6 wherein said oleaginous fluid comprising from 5 to about 100% by volume of the oleaginous fluid of a material selected from a group consisting of esters, ethers, acetals, di-alkylcarbonates, hydrocarbons, and combinations thereof.

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8. The method of claim 6 wherein said non-oleaginous liquid is an aqueous liquid.

9. The method of claim 8 wherein said aqueous liquid is selected from the group consisting of sea water, a brine containing organic or inorganic dissolved salts, a liquid containing water-miscible organic compounds, and combinations thereof.

10. The method of claim 6 wherein said amine surfactant is selected from diethoxylated tallow amine; diethoxylated soya amine; N-aliphatic-1,3-diaminopropane wherein the aliphatic group is a C₁₂ to C₂₂ hydrocarbon; or combinations thereof.

11. A method of injecting drill cuttings into a downhole area of a subterranean well, said method comprising:

- collecting the drilling cuttings from a subterranean well drilled with an invert emulsion drilling fluid, said invert emulsion drilling fluid includes: an oleaginous fluid; a non-oleaginous fluid; an amine surfactant having the structure

$$\begin{array}{c} \text{R} - \text{N} \backslash \text{---} \text{(CH}_2\text{CHR}'\text{A})_x \text{H} \\ \quad \quad \quad \backslash \\ \quad \quad \quad \text{(CH}_2\text{CHR}'\text{A})_y \text{H} \end{array}$$

wherein R is a C₁₂-C₂₂ aliphatic hydrocarbon; R' is an independently selectable from hydrogen or C₁ to C₃ alkyl; A is NH or O, and 1 ≤ x+y ≤ 3;

- adding acid to said drilling cuttings so as to change the drilling cuttings from being oil wet to being water wet;
- grinding and suspending said cuttings in an aqueous based injection fluid; and

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- e) injecting said suspension of cuttings in injecting fluid into a disposal zone in a subterranean well.

12. The method of claim 11 wherein said oleaginous fluid comprising from 5 to about 100% by volume of the oleaginous fluid of a material selected from a group consisting of esters, ethers, acetals, di-alkylcarbonates, hydrocarbons, and combinations thereof.

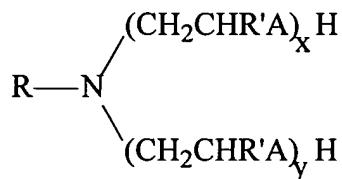
13. The method of claim 11 wherein said non-oleaginous liquid is an aqueous liquid.

14. The method of claim 13 wherein said aqueous liquid is selected from the group consisting of sea water, a brine containing organic or inorganic dissolved salts, a liquid containing water-miscible organic compounds, and combinations thereof.

15. The method of claim 11 wherein said amine surfactant is selected from diethoxylated tallow amine; diethoxylated soya amine; N-aliphatic-1,3-diaminopropane wherein the aliphatic group is a C₁₂ to C₂₂ hydrocarbon; or combinations thereof.

16. A method of fracturing a subterranean formation, the subterranean formation being in fluid communication with the surface via a well, the method comprising:

a) injecting a fracturing fluid into said well, wherein said fracturing fluid includes: an oleaginous fluid; and an amine surfactant having the structure



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wherein R is a C₁₂-C₂₂ aliphatic hydrocarbon; R' is an independently selectable from hydrogen or C₁ to C₃ alkyl; A is NH or O, and 1 ≤ x+y ≤ 3; and oil-wet propant material;

- b) pressurizing said fluid so as to cause the subterranean formation to fracture and allow the propant materials to enter said crack;
- c) adding acid to said fluid so as to change the oil-wet propant materials into water-wet propant materials and;
- d) washing said well with an aqueous based wash solution.

17. The method of claim 16 wherein said oleaginous fluid comprising from 5 to about 100% by volume of the oleaginous fluid of a material selected from a group consisting of esters, ethers, acetals, di-alkylcarbonates, hydrocarbons, and combinations thereof.

18. The method of claim 16 wherein the fracturing fluid further includes a non-oleaginous liquid.

19. The method of claim 18 wherein said non-oleaginous liquid is selected from the group consisting of sea water, a brine containing organic or inorganic dissolved salts, a liquid containing water-miscible organic compounds, and combinations thereof.

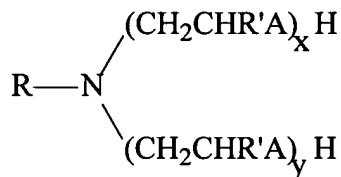
20. The method of claim 16 wherein said amine surfactant is selected from diethoxylated tallow amine; diethoxylated soya amine; N-aliphatic-1,3-diaminopropane wherein the aliphatic group is a C₁₂ to C₂₂ hydrocarbon; or combinations thereof.

21. The method of claim 16 wherein the propant material is selected from the group consisting of quartz gravel, sand, glass beads, ceramic pellets, and combinations thereof.

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22. (NEW) A method of electrically logging a subterranean well, the method comprising:

- drilling the subterranean well with an invert emulsion drilling fluid, wherein said fluid includes: an oleaginous fluid; a non-oleaginous fluid; and an amine surfactant having the structure



wherein R is a C₁₂-C₂₂ aliphatic hydrocarbon; R' is an independently selectable from hydrogen or C₁ to C₃ alkyl; A is NH or O, and 1 ≤ x+y ≤ 3;

- acidifying the invert emulsion drilling fluid until the filtercake solids are reversed from being oil-wet to being water-wet; and
- electrically logging said well.

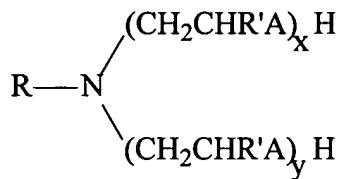
23. (NEW) The method of claim 22 wherein the invert emulsion drilling fluid is acidified by carbon dioxide from the formation.

24. (NEW) The method of claim 22 wherein the invert emulsion drilling fluid is acidified by hydrogen sulfide from the formation.

25. (NEW) A method of gravel packing a downhole area of a subterranean well, said method comprising:

- forming a mixture of a gravel packing material and an invert emulsion drilling fluid, wherein said fluid includes: an oleaginous fluid; a non-oleaginous fluid; an amine surfactant having the structure

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wherein R is a C₁₂-C₂₂ aliphatic hydrocarbon; R' is an independently selectable from hydrogen or C₁ to C₃ alkyl; A is NH or O, and 1 ≤ x+y ≤ 3;

- b) injecting said mixture of gravel packing material and invert emulsion into a subterranean well so as to gravel pack the downhole area ; and
- c) acidifying said fluid so as to change the oil-wet gravel packing materials into water-wet gravel packing materials and;
- d) washing said well with an aqueous based wash solution.

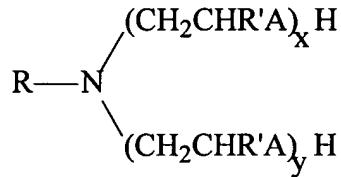
26. (NEW) The method of claim 25 wherein said fluid is acidified by carbon dioxide from the formation.

27. (NEW) The method of claim 25 wherein said fluid is acidified by hydrogen sulfide from the formation.

28. (NEW) A method of fracturing a subterranean formation, the subterranean formation being in fluid communication with the surface via a well, the method comprising:

- a) injecting a fracturing fluid into said well, wherein said fracturing fluid includes: an oleaginous fluid; and an amine surfactant having the structure

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wherein R is a C₁₂-C₂₂ aliphatic hydrocarbon; R' is an independently selectable from hydrogen or C₁ to C₃ alkyl; A is NH or O, and 1 ≤ x+y ≤ 3; and oil-wet proppant material;

- b) pressurizing said fluid so as to cause the subterranean formation to fracture and allow the proppant materials to enter said crack;
- c) acidifying said fluid so as to change the oil-wet proppant materials into water-wet proppant materials and;
- d) washing said well with an aqueous based wash solution.

29. (NEW) The method of claim 28 wherein said fluid is acidified by carbon dioxide from the formation.

30. (NEW) The method of claim 28 wherein said fluid is acidified by hydrogen sulfide from the formation.